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The Earliest States in China: A Long-term Trajectory Approach

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Abstract The origins, development, and makeup of early state societies in China have long been a favorite topic of research, though there has recently been an upsurge of attention among archaeologists in China and abroad. Research has been dominated by the identification of the Erlitou site from the early second millennium BC as the center of the earliest state in China, sometimes identified with the Xia Dynasty. Recently, several scholars have employed neo-evolutionary criteria for the identification of Erlitou society as China's earliest state in an attempt to provide objective criteria for the traditional historiographical narrative. Overarching social and ecological models of cultural change have been severely criticized by anthropological archaeologists, and many archaeologists studying the development of ancient societies prefer to focus on individual case studies or specific institutions rather than on the state. In contrast to recent archaeological scholarship that has called for its total abandonment, we find the "state" a useful concept for understanding local trajectories as well as cross-cultural comparisons. In this article we suggest a way of incorporating the warnings against simplistic overarching models while maintaining the notion of rapid sociopolitical change associated with state formation. Based on an analysis of the long-term trajectory, we identify, in north China, two phases of rapid transformations: the first, starting around 2500 BC, when several unstable regional states evolved and declined, and the second, around 1600 BC, when an intraregional state, usually identified with the historical Shang, rapidly evolved.

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Introduction: The state in Chinese scholarship

Identifying the first state in Chinese history can be a heated and sometimes emotionally loaded endeavor. It is not unrelated to issues of current national identity and often focuses on the authenticity of the earliest historical records in China. The strong historic paradigm of Chinese archaeology (Falkenhausen 1993) is true, even for periods mentioned in texts written a thousand years or more after the fact and that contain clear mythological elements. Thus it is difficult for even the most cautious archaeologist to separate discussions of the earliest state in China from the debate about the Xia (夏), supposedly the earliest dynasty in Chinese history (Liu 2009, p. 220).

There are, of course, opposing archaeological views: some locate the earliest states among Neolithic cultures such as Hongshan (红山) or Liangzhu (良渚) of the fourth and third millennia BC (e.g., Shao 2000; Zhang 2000), while others push it forward to the early Shang period of the second half of the second century BC (e.g., Bagley 1999). The most common view, however, holds that the first state-level society in China emerged in the central Yellow River area during the Erlitou period (e.g., Liu 2004; Liu and Chen 2003; Zhongguo 2003).

Similar to other areas of world, disagreements over the first state in China are in many cases semantically driven. The way a state is defined and how one draws the line between states and their nonstate predecessors is often determined by the "discovery" of the earliest state. Although semantic definitions can be manipulated according to case-specific needs, we hold that they also touch on important theoretical issues related to the understanding of state and prestate societies. Our definition emphasizes the long-term trajectory of social, economic, and cultural change, thereby focusing attention on the dynamics of sociopolitical change. Before explicating our approach and applying it to the Chinese data, we introduce some of the key historical definitions and narratives of the classical Chinese texts and show how they have shaped the search for the earliest state in Chinese history. We also present some of the archaeological approaches used in China to locate and study the earliest states.

The search for the Xia

According to traditional historical narrative, the first great dynasty in Chinese civilization was the Xia, founded by the great Yu (大禹), the last of the great five mythological emperors and the savior of China from the great flood. This historical narrative was synthesized by the great Han historian, Sima Qian (司馬遷 c. 145–85 BC) in the *Shiji* (史記). According to this canonical synthesis, the Xia Dynasty boasted some 30 kings after Yu and ruled for more than 400 years until it was

replaced by the Shang (商). The *Shiji* and all other sources, however, provide few concrete descriptions of this dynasty and its kings beyond the clearly mythological narrative of Yu's great deeds (Watson 1993).

The question of identifying the actual peoples represented by the first dynasties in Chinese history has been the concern of traditional scholarship in China. Many scholars have contended that we can understand the distant past only by extrapolating the unknown from the known, starting from solid historical foundations. The Zhou (周) Dynasty (1046–221 BC), although shrouded in mythological origin stories, has always been considered to be historical and factual in light of the numerous written documents and inscribed bronze vessels documenting the period. The generally accepted chronology of Chinese history begins in 841 BC, the starting date of the chronological tables composed by Sima Qian (Watson 1993). Over the past 2,000 years, Chinese scholars have tried to extend those dates farther back in time, at least as far as the Xia period, if not earlier.

When archaeology emerged as a discipline in China in the early 20th century, the excavations at Yinxu confirmed the existence of the Shang Dynasty. The deciphering of oracle bone inscriptions yielded, for example, several names of Shang kings that are remarkably consistent with that provided in the *Shiji*. Galvanized by the independent confirmation of the Shang Dynasty's existence by materials external to the historical texts, many Chinese scholars hoped that archaeology would produce evidence to prove the existence of the Xia Dynasty as well (Chang 1981; Liu and Chen 2012). In the 1950s, an archaeological expedition (determined by the textual description of the Xia), headed by Xu Xusheng (1959), set forth to discover the remains of the Xia. In the 1960s, excavations near Erlitou (二里头) village in Henan uncovered a massive site that predated the Shang remains in Yinxu and was hastily identified as the Xia Dynasty's center of power. This identification, however, has been strongly contested by scholars who view the Xia as a mythological entity and have found no concrete evidence of it in the archaeological record (Allan 1984, 1991; Keightley 1983; Linduff 1998; Liu and Xu 2007; Thorp 1991).

In 1996, the Xia–Shang–Zhou Chronology Project was commissioned by the Chinese government to produce a reliable systematic and standardized chronology of the early Chinese predynastic periods. Relying on both historical sources and archaeological data, the team dated the Xia Dynasty to 2070–1600 BC and the Shang to 1600–1046 BC. Although the project has generated many new archaeometric and correlative dates, many scholars, in both China and abroad, have criticized it for merely refitting the archaeological data into the traditional model of sequential dynastic development (Lee 2002; Li 2002; Shaughnessy 2009).

The Erlitou site and the common view of the earliest state society in China

As explained above, reconstructions of the earliest state in China are usually focused on a single site—Erlitou. While other sites dating to c. 1900–1550 BC are known, with some of them assigned to the Erlitou or the Xia culture, none has been

extensively excavated or exhibited the attributes that researchers of Chinese archaeology have associated with the state. Some of the arguments made to support the identification of Erlitou (the site and the culture) as a state-level society are tautological: for example, public structures are labeled as palaces (see below), the existence of which is then used to prove the presence of kings, who therefore must have ruled a state. Other arguments are more "cultural" in nature, associating, for example, the discovery of bronze vessels in Erlitou with the function of similar vessels in historically known Chinese states (e.g., Xu 2009). Below we focus on more objective criteria that are often used to justify the identification of Erlitou as the earliest state-center in Chinese history.

Simply stated, the common reconstruction of Erlitou as a state comprises the following six points: (1) Erlitou is a very large site, covering approximately 300 ha and having an estimated population of 18,000–30,000 inhabitants at the height of its occupation (phases II and III; Liu 2006, p. 183). (2) A four-tier regional settlement hierarchy appeared during the Erlitou period, signifying the domination of the Erlitou site (as the paramount center) over a state-level system with at least three levels of political control above ordinary villages (Liu and Chen 2003, following the definition by Wright 1977). (3) Military expansion during phase III of Erlitou is said to have brought regions as far away as 500 km under the control of the state (Liu 2004, pp. 232–234). (4) A cluster of rammed-earth foundations enclosed by rammed-earth walls about 2 m in width situated more or less at the center of the site and known in the literature as the "palace city" or "palatial area" (*gongcheng* 宫城) (Zhongguo 2003) are seen as evidence of intrasite stratification. The largest foundations inside this area, labeled Palace I and Palace II, stand on top of rammed earthen platforms 9600 m^2 and 4200 m^2 in size, respectively, and are said to have been the seat of the leader (or king) of the state. (5) Craft production—a bronze industry in particular, but also the production of turquoise and jade artifacts—is associated with technological advancement. The location of production near the palatial area in Erlitou and the fact that bronze vessels were found exclusively at the Erlitou site suggest centralized control over the production and consumption of labor-intensive prestige artifacts (Liang and Sun 2004; Liu and Xu 2007). (6) Differences in the size of graves and the elaboration of their furnishings are seen as a reflection of sociopolitical stratification (Zhongguo 1999).

Criticism has been leveled at different elements of this reconstruction. For example, the identification of the main public structures in Erlitou as palaces has been challenged: palaces are usually defined as multifunctional buildings, serving as the king's residence and also as the central hub of state administration (Flannery 1998, pp. 22–36). The Erlitou complexes, despite being composed of large walled courtyards with roofed buildings, are actually quite small. As Thorp (1991) has suggested, these structures are better explained as locations of public gatherings or rituals, where large audiences convened in the courtyard, rather than as the residences of kings. Even more substantially, the proposed four-tier regional settlement hierarchy model has been criticized as being based on subjective criteria (Peterson and Drennan 2011; see further below).

The "state" in archaeological research

These interpretations of the Chinese state as well as the primacy ascribed to Erlitou are not only rooted in the Chinese flavor of historical narrative and tradition but are also influenced significantly by theoretical advances and scholarship in the wider archaeological world. This is most evident in the works of scholars such as Liu and Chen (2012) who employ neo-evolutionary models to support their arguments for the objective identification of the Erlitou site as that of China's first state. From a broader perspective, these ideas are rooted in the models (and their espoused stages of social evolution) proposed by Service (1975) and Fried (1960) and embraced during the 1960s and 1970s by archaeologists seeking to uncover universal rules and general laws of social and cultural change (e.g., Flannery 1972; Wright 1977). These neo-evolutionary models, as they were later called, were powerful tools for investigation of early state inception and for cross-cultural comparisons of political groups and their development and transformation over time (e.g., Adams 1966; Harris 1968).

Beginning in the 1980s, these models of cultural evolution, which viewed societies as developing along more or less the same lines and through similar stages, were criticized as overarching and reductionist (Wolf 1982) and based on simplistic functionalist theories (Paynter 1989) and uncritically subjecting societies to trait lists (Trigger 1998). Even more critical voices argued that the concept of the state itself is a construct designed as the pinnacle of human development and that the trait lists with which processual theories identify a state are, in fact, an exercise in circular reasoning. Not only did these models fail to provide empirical traits for comparison of different political entities, but the identification of predefined attributes of states served only as a classificatory foundation of the search for the characteristics of the state (Bernbeck 2008, p. 537). The very notion that cultures could be compared because they shared common political and social constellations and had developed through similar stages was likewise subject to forceful attacks (e.g., Hodder 1982; Johnson 2004; Miller and Tilley 1984; Stahl 1993).

Criticism of the state as a theoretical concept, however, did not result in the rise of a new paradigm. Some scholars, such as Abrams (1988), called for the concept of state to be abandoned on the grounds that it is an "ideological project" that prevents us from seeing political practices for what they really are. Other students of political entities and their development have looked for alternative concepts and definitions. For example, A. Smith (2003) rejected the term "state" in favor of the less loaded concept of "early complex polities," while Campbell (2009) called for a radical break with the current approach to ancient states and a shift to a focus on power relationships as networks. While the actual stages proposed by the neo-evolutionary models are used more sparingly in current archaeological writing, Campbell finds the most widely used approaches to understanding the mechanisms of early states as simple investigations of power relationships between the ruling class and everyone else. More recently, Joyce (2010) has taken up poststructuralist theory in his investigation of social development, championing an approach that aims at a contextual understanding of social change and subjective histories of past societies. In essence, such views reject the possibility of generalizations or cross-cultural

comparisons, which they see as imposing our own preconceived constructs and cultural biases on the unique and irreducible variability of past (and present) societies.

These critiques have had a profound impact on anthropological archaeology. Today, many archaeologists, including the more processually oriented ones, tend to avoid overarching social and ecological models of cultural change, preferring to focus on individual case studies or specific institutions instead. Feinman (1998) has questioned demographic thresholds as well as perceived correlations between size and scale and sociopolitical complexity and focused on their many similarities and differences instead. Stein (2001) has described this as a shift from an interest in models that explain state origins to models of state dynamics—models that include interests in political economy (Earle 1997; Stein 1998; M. E. Smith 2004), ideology (Blanton et al. 1996; Claessen and Oosten 1996; DeMarrais et al. 1996), heterarchy as a corrective to the idea of hierarchy (Crumley 1995; Levy 1999), and agency beyond the hands of powerful elites (Dobres and Robb 2000; Johnson 1989; Joyce et al. 2001). Many scholars have chosen to discuss cities as social constructs where power is formulated and negotiated (e.g., Nichols and Charlton 1997; M. L. Smith 2003; Yoffee 2005). More recent comparative studies that have examined the state directly are rarely interested in placing it within the long-term development trajectory of human society. For instance, in their much-cited article, "Order, Legitimacy, and Wealth in Ancient States," Baines and Yoffee (1998) attempted to understand not the emergence of states but rather their ability to survive and persist over long periods of time.

In this article we advance a perspective that, while taking to heart the critiques enumerated above, retains the state as a concept that is still crucial to our understanding of local trajectories and that enables cross-regional and cross-cultural comparisons. We are well aware that the term "state" gained its current meaning in tandem with the rise of modern nation-states and that using it in archaeological contexts puts us in danger of projecting modern ideas and concepts back onto premodern societies. Nonetheless, in the absence of an alternative accepted term for describing large-scale ancient polities and large-scale political changes over time, we opt to retain this term while using it cautiously and explicitly enough to avoid anachronistic baggage.

More substantially, we believe that the types of categories suggested by neo-evolutionists need not be entirely abandoned, since they do, in fact, underscore important factors in sociopolitical arrangements: changing leadership strategies, various political systems, and labor investment and specialization, all criteria emphasized by recent scholarship critical of neo-evolutionary models. However, we strongly oppose the simplistic and uncritical way in which these criteria are often employed, i.e., using criteria from one period as a check list for examining the "state-ness" of a specific site or culture. We further reject the idea that the evolution of the state was unilinear, constant, and irreversible. In many instances societies that could be defined as states reverted to less extensive and complex forms of organization. Moreover, we do not envision a process wherein its predestined end-product is the state. In some places, independent states may never evolve, and in others, such as China, states continue to evolve and change dramatically long after

the level of statehood has been reached. Instead, we advocate the examination of the long-term trajectory in order to identify periods of rapid change, i.e., periods of stability and periods of rapid growth that might be indicators of the beginning of a state. This approach places an emphasis not on absolute measures or levels (such as the minimum size of a territory that a polity should control in order to be called a state) but rather on the relative change vis-à-vis earlier and later societies that are part of the same trajectory. The most important archaeological implication of this approach is that, although some aspects of this transition might be gradual, the formation of the state will often be rapid and involve the coevolution of different sociopolitical variables. Thus we expect such periods in the archaeological record to be marked by a rapid (in archaeological terms) expansion of different types of public-related (above the household level) activities.

This approach does not constitute a return to a list of formal attributes but rather offers a dynamic perspective that compares the state with entities that preceded it in the local trajectory. It does not address the reasons for the development of a state at a certain time and place, but it does provide important insights into the sociopolitical systems of state and prestate societies and the strategies of their leaders. Most importantly, by examining developments of cultures in prehistory—in a sequential chronological order and as open issues to be determined empirically rather than assuming a priori that they are structured and universal—we can untangle ourselves from both historical biases and the fallacy of seemingly objective external criteria. The examination also enables meaningful cross-cultural and cross-regional comparisons, which we believe are an important aspect of anthropological archaeology (Drennan et al. 2012; Earle 2011; Peregrine 2001).

Our understanding of the way archaeological research should approach these questions is similar to the perspective offered by Pauketat (2007), who argues for a cross-cultural comparison where the unit of comparison is the long-term historical trajectory. Such comparisons avoid the trait-list approach, which, according to Pauketat, is embodied even in the most advanced models of the state, and thus allow for observations about similarities and differences in long-term processes, even when the scale of the social units undergoing these processes is different. Because it moves away from predefined top-down models of the state, such a perspective is suitable for the integration of new sensitivities about political and cultural legitimization, ideological constructions, and the negotiation of power between elites and commoners.

In contrast to Pauketat and others, we do not believe that the concept of the state has lost its utility. On the contrary, taking a step back from the specific period or social stage under consideration and looking at the long-term trajectory (including periods that preceded and followed it) allows us to identify periods of stability or gradual change and periods when many social aspects were being rapidly and simultaneously transformed. We argue that such periods of rapid development represent a new social framework that can be correlated with the concept of the state. Such a state can have different scales or even different parameters in different places, but its position within the long-term trajectory is similar. These codeveloping parameters might be more easily quantified, for example, population density, geographical extent, or investment in public structures, but they also might be more

ideological in nature, for example, evidence of more intensive ritual activity or more extensive use of symbols of personal identity. Our insistence on the importance of long-term trajectories accords with Gledhill's (1988, pp. 3–4) assertion that "to deny the cumulative social changes that create qualitatively different social and political organizations is not only to deny the immense transformations that have taken place in history, but also results in a gross reduction of those societies whose particular life ways and uniqueness are meant to be preserved."

We examine the long-term trajectory of social development in China and ask whether, as many would have us believe, Erlitou does indeed represent a rapid transformation from a less complex form of social organization into a state. Our discussion is limited mainly to developments in the middle Yellow River basin and to the third and second millennia BC, but when relevant, we also refer to earlier periods and developments in other parts of China.

The long-term trajectory

As in many other regions in the world, rapid social, economic, and political transformation in China began with the transition to agriculture. In China, the initial stages of this process are dated to about 7000 BC and are not well documented. This is not the place for a comprehensive survey of the development of village society and the initial formation of economic and social hierarchies, a topic that has been addressed by several recent articles and books (e.g., Liu and Chen 2012; Peterson and Shelach 2010, 2012; Shelach and Teng 2013). It seems that by the fourth millennium BC, China was dotted with a large number of small-scale societies, each with its geographically limited local hierarchy, evolving craft specialization, and increased levels of economic and social stratification.

Societies of the fourth and early third millennia BC are associated with late Neolithic "cultures" such as the Late Yangshao (仰韶) in the central Yellow River basin and the Wei River basin, Hongshan (红山) in Northeast China, Majiayao (马家窑) in Northwest China, Dawenkou (大汶口) on the eastern coast, and Qujialing (屈家岭) in the middle Yangzi River basin (Fig. 1, Tables 1 and 2). While there was a great amount of variability among these regions, and even within each of these cultural spheres, many of these societies share some basic archaeological attributes. These include the appearance of larger graves furnished with larger numbers of labor-intensive artifacts such as jades and elaborate ceramic vessels. At the Dawenkou-type site, for example, graves belonging to the middle Dawenkou period range in size from 0.42 to 8.12 m^2. While the smaller burials are simple pit graves, larger ones have a secondary ledge and a wooden coffin. The number of artifacts placed in these graves ranges from none to 106, and the size of the grave tends to correlate with the number of artifacts placed in it (Liu 2004, pp. 138–142; Underhill 2002, pp. 104–113). Such variability, seen also in other contemporaneous cemeteries, was unknown during earlier periods.

Some of the habitation sites also are much larger than before. For example, the middle Yangshao-period Xipo (西坡) site in Henan is 40 ha in size, or ten times larger than the largest early Yangshao site in the region. The contemporaneous

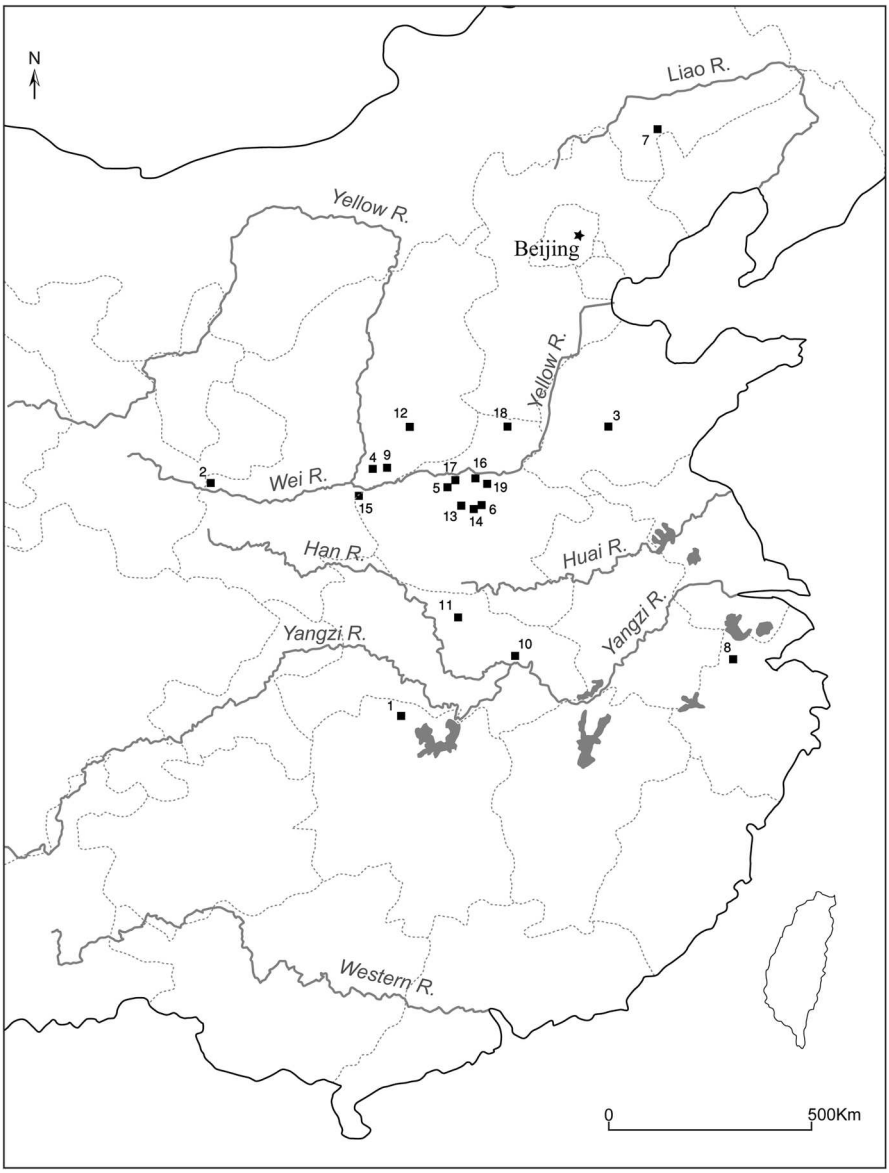

Fig. 1 Map of sites mentioned in the text: 1, Chengtoushan; 2, Dadiwan; 3, Dawenkou; 4, Dongxiafeng; 5, Erlitou; 6, Guchengzhai; 7, Hongshan; 8, Liangzhu; 9, Nanguan; 10, Panlongcheng; 11, Shijiahe; 12, Taosi; 13, Wangchenggang; 14, Xinzhai; 15, Xipo; 16, Xishan; 17, Yansh; 18, Yinxu; 19, Zhengzhou

community at Dadiwan (大地湾) in Gansu occupied an estimated site area of 50 ha, at the center of which stood a large and complex structure positioned on an elevated platform and measuring over 300 m^2 (Zhang 2005, pp. 76–77). While so far only a handful of systematic surveys have been conducted in China, their results suggest

Table 1 Late Neolithic archaeological cultures of North China

Date BC	Northwest (upper Yellow River)	Central North (Ordos region, Inner Mongolia and Northern Shanxi)	Wei River basin	Middle Yellow River	Lower Yellow River	Northeast
3500	Majiayao (马家窑) 3300–2500		Late Yangshao (仰韶) 3500–3000	Late Yangshao (仰韶) 3500–3000	Dawenkou (大汶口) 4300–2600	Hongshan (红山) 4500–3000
3000		Laohushan (老虎山) 2800–2300	Longshan (龙山, also known by other, more localized names) 3000–1900	Henan Longshan (龙山, also known by other, more localized names) 3000–1900	Shandong Longshan (山东龙山) 2600–1900	Xiaoheyan (小河沿) 3000–2200
2500	Banshan (半山) 2500–2300					
	Machang (马厂) 2300–2000					
2000						

Table 2 Late Neolithic archaeological cultures of Central and South China

Years BC	Lower Yangzi	Middle Yangzi	Chengdu basin	Lingnan	Southeast coast
3500	Liangzhu (良渚) 3300–2100	Qujialing (屈家岭) 3300-2600		Dingsishan (顶蛳山 Phase IV) 4000–3000	Xiantouling (咸头岭) 4000–3000
3000				Shixia (石峡) 3000–2000	Yangliang (涌浪 lower Zhujiang) 3000–2000
					Tanshisan-Niubishan (昙石山–黄瓜山, Fujian) 3000–2000
2500		Shijiahe (石家河) 2600–1900	Baodun (宝墩) 2700–1700		
2000					

that regional population levels likewise increased substantially during this period. Within the 219 km^2 surveyed in the Yiluo River valley in Henan (Qiao 2007), occupation increased from a total settlement area of 2.3 ha (five sites) during the early Neolithic to 46 ha (ten sites) during the middle Yangshao and 76 ha (30 sites) during the late Yangshao. Similar trends also are documented in the Chifeng region (Liao River region) of northeast China (Chifeng 2011).

Such developments suggest an increase in the population of some, but not all, of the villages and perhaps the incipient development of a regional settlement hierarchy. The appearance of walled sites—for the first time in Chinese history—may be correlated with these emerging local hierarchies, though the walls themselves are relatively small. At Xishan (西山) in Henan, a ditch and a rammed-earth wall enclose a portion of the site, perhaps 10 ha in size. The wall, now mostly destroyed, was originally 3–5 m wide and 2.5 m high (Liu 2004, pp. 93–94). In the middle Yangzi River valley, the more-or-less contemporaneous site of Chengtoushan (城头山) was 8 ha in size and surrounded by a wide moat and an earthen wall. During the final stage (c. 2800 BC), this moat was 35–50 m wide and 4 m deep, and the walls were 5 m high, 27 m wide at the bottom, and 16 m wide at the top (Hunan 2007, pp. 84–87). Such public structures suggest the pooling of resources and manpower in what may have emerged as the central nodes of the local settlement hierarchies.

Emerging craft specialization is well attested to by the production of labor-intensive jade artifacts. Relatively large numbers of jades are known from the ritual sites of the Hongshan culture, but jade production is known from other regions as well. Ceramic vessels from all the subregions also suggest increased sophistication and probably some level of specialization. Household remains also indicate a certain amount of agricultural intensification and craft specialization among middle and late Yangshao communities (Peterson and Shelach 2010).

The middle Yellow River trajectory of social change and the emergence of state-level societies

It is against the background of these socioeconomic developments in different parts of China during the fourth and early third millennia BC that we now come to our examination of the trajectory of the middle Yellow River basin. As already mentioned, we are focusing on this region because it is here that both traditional and modern scholarship has identified the origins of the state. However, as suggested below, this may not be the only place where similar trajectories can be observed. The earlier part of this trajectory is associated with the so-called Henan and Shanxi Longshan (龙山) cultures, also known by other more localized names and dating to c. 3000–1900 BC. It continues with the Erlitou culture c. 1900–1550 BC, Erligang (二里岗 or Early Shang) c. 1600–1300 BC, and Yinxu (殷墟 or Late Shang) c. 1300–1050 BC. It is common to add the so-called Huanbei (洹北, c. 1400–1300 BC) phase as an intermediate period between the Erligang and Yinxu phases, but this is not particularly relevant to our present discussion. As the archaeological data pertaining to this trajectory are vast, we focus on aspects that we see as relevant for understanding socioeconomic and political developments and compare them in order to identify periods of more rapid cochanges.

The emergence of regional states during the third millennium BC

During the third millennium BC, and especially during its second half, the settlement system of the Yellow River basin seems to have undergone a dramatic transformation. The overall trend throughout most regions of North (and Central) China is one of substantial increase in population density. However, reliable information on population dynamics derived from systematic surveys is currently available for only a handful of places. For other areas, reconstructions rely less on systematic findings and more on general impressions. The results of a systematic regional survey in the Rizhao (日照) region of southeastern Shandong demonstrate phenomenal growth, from 27 sites covering an area of 47.3 ha during the Late Dawenkou period to 463 sites covering an accumulated area of 2,005.4 ha during the Longshan period (Underhill et al. 2008, pp. 6–8).

Indications that this trend is shared by other regions in the lower Yellow River basin are seen in the tripling of the number of sites documented by the Cultural Relics Bureau from about 500 during the Dawenkou period to around 1,500 during the Longshan period (Guojia 2007). The number of sites in the middle Yellow River basin reflects a similar increase from the late Yangshao period to the Longshan period (Guojia 2006). Results from a regional survey of the Yiluo area, in the heart of the middle Yellow River basin (northwest of Wangchenggang), suggest that population levels may have decreased during the Late Yangshao and the early Longshan period (though this is by no means a dramatic or even a clearly demonstrated phenomenon), but that they recovered and proceeded to rise substantially during the middle and late Longshan periods (Liu et al. 2003, p. 88). This variation in the magnitude and exact timing of population growth is related

to a point we would like to emphasize for other aspects of the socioeconomic process. While the general direction of change is shared by many of the societies that existed in North China during the third millennium BC, the details of each local trajectory are unique.

In most regions, population growth during the Late Neolithic was coupled with the clustering of sites and the formation of site hierarchies. The few sites that were fortified stood at the top of the settlement hierarchy. More than 20 walled sites, some very large in scale, are known from the lower and middle Yellow River area. The relatively regular spacing of these sites, at a distance of some 30–50 km from one another (Guojia 2006, 2007; Liu 2004), suggests that they were central nodes of small-scale polities each covering some 1,500–2,000 km^2. Other evidence, such as the association of fortified sites with prestigious buildings and artifacts and specialized production activities, also supports this hypothesis (Liu 2004, pp. 104–105; Underhill et al. 2008).

Of these fortified sites, Taosi (陶寺) in Shanxi is the most impressive (Fig. 1). Its walls are up to 10 m wide, and at the peak of the site's expansion they would have enclosed an area of some 280 ha. An internal rammed-earth wall separated the residential and ceremonial areas of the elite from the areas inhabited by commoners, signifying the development of a stratified society (He 2013; Ren 1998; Zhongguo et al. 2005). Remains of a large and complex structure have recently been excavated inside the smaller walled enclosure at the southeastern side of Taosi (Zhongguo et al. 2004, 2007). A series of rammed-earth foundations and retaining walls form a semicircular shape covering an area of about 1,400 m^2. A circular platform and pillar bases, also made of rammed earth, are arranged on top of the foundations (Fig. 2). The excavators describe this uniquely shaped building, labeled II FJT1, as a ritual "astronomical observatory." Although this hypothesis cannot be tested, the complexity of the structure, the amount of labor invested in it, and its unique shape suggest that it was indeed used for ritual or other public functions.

It is argued that Taosi controlled a three- (Liu and Chen 2012, p. 221) or four-tier (He 2013) settlement hierarchy in the area between the Fen River and the Kuai River. A recent study counted 54 Taosi-period sites in this region; at least 3 of them, not including Taosi itself, are more than 100 ha in size, 23 are between 10 and 99 ha, and the rest are smaller (He 2013). Regardless of the exact number of hierarchical tiers (which in any case may be impossible to determine based on current data), the range in size, the more-or-less even distribution of the largest sites, and the association between labor investment and the largest site (Taosi) do suggest the development of a regional settlement hierarchy and the ability of the center(s) to recruit labor and accumulate resources.

The Taosi mortuary data also suggest a rapid increase in socioeconomic gaps between individuals and a stratification that was much more clearly defined (into ranks perhaps) than ever before. Of over 1,000 graves excavated at Taosi, 87 % are small pits, just large enough to contain a corpse in the extended position, containing few or no grave goods. Another 12.7 % are medium-sized graves. These had a wooden structure (coffin) and contained several dozen artifacts, mostly pottery, but also a number of prestigious offerings, such as jade ornaments and pig mandibles. Only 1.3 % of the graves excavated at Taosi were large tombs, up to 3 m long, 2.5 m wide,

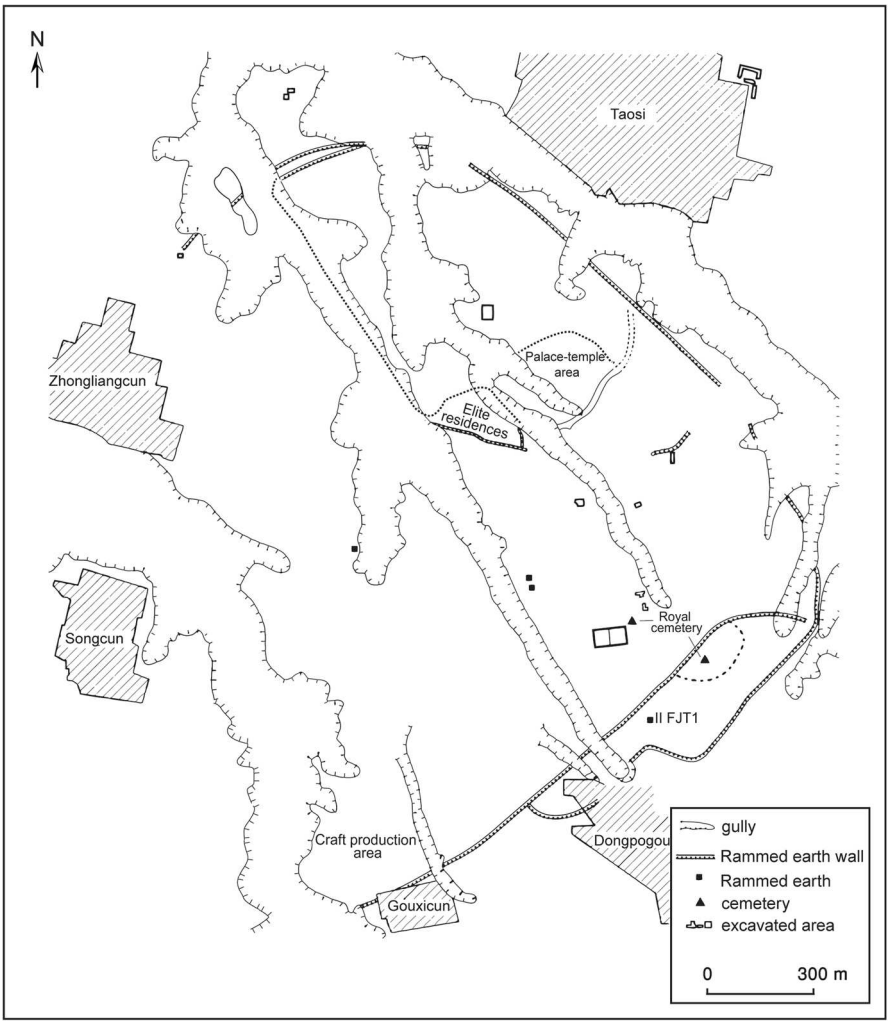

Fig. 2 Map of the Taosi site

and up to 2 m deep, each containing a wooden coffin and hundreds of burial goods, including painted red pottery, jade artifacts, musical instruments (such as drums and large chime stones), painted wooden artifacts, complete pig skeletons, and more (Chang 1986, pp. 276–277; Liu 2004, pp. 135–137; Zhongguo 2010, pp. 572–574).

Although we focus on the Taosi site and polity, polities of more-or-less similar scale existed throughout North China and beyond. The peak and decline of each of these polities did not exactly overlap (see more below), and the leadership strategies of the elites who controlled them, as well as the power of their paramount leaders, may have varied. None of these polities, however, controlled or exerted direct influence beyond the immediate area around its center. Some of these political centers may have been as large and labor intensive as Taosi, but others were

substantially smaller in scale and less labor intensive. A preliminary report on a recently discovered site named Shimao (石峁) in Shenmu County, Shaanxi Province, suggests that it covered an area of 400 ha, was surrounded by a wall made of stone, and had an inner area divided into three enclosures. Such parameters would make it the largest and most labor-intensive site of the late third millennium BC in China, but because data on this site are currently found only in journalistic sources (including its inclusion in the list of the "Top 10 archaeological finds in China" for 2012), those reports cannot yet be corroborated. Especially worrisome is the dating of the site to the Longshan and Xia dynasties without any supporting radiocarbon data that would convincingly locate it in this period.

The process of site clustering is clearly seen in the Rizhao survey region, where no clustering of Dawenkou sites is apparent. In contrast, during the Longshan period, settlement in this region is clearly clustered around two very large sites: Liangchengzhen (两城镇, 272.5 ha) in the northern part of the region and Yaowangcheng (尧王城, 367.5 ha) in its southern part (Underhill et al. 2008, pp. 6–8). Remains of walls have been found at Liangchengzhen, though it is not clear what proportion of the site they enclosed. Thus it is possible in this area that prestige and authority were symbolized less by impressive public structures, such as tall site walls, and more by the consumption of rare and labor-intensive artifacts and foods in mortuary practices and in the daily life of the elite (Underhill 2002).

An example of a smaller fortified site is Wangchenggang (王城岗) in Henan. The area of the site is estimated to be 50 ha, but only a portion of it was fortified and the fortifications were made of several tamped-down earth wall enclosures. The smallest and best-preserved enclosure is located in the northeastern part of the site: it is about 2 ha and divided into two adjacent enclosures. The walls are based on a foundation trench 4.4 m wide and 2.5 m deep and filled with pounded earth layers (Chang 1986, pp. 273–276; Liu 2004, pp. 104–105), but it is unclear what their aboveground height was. In recent years a much larger enclosure, covering more than 30 ha and surrounded by walls and moats, was located to the west of the two smaller enclosures. The larger enclosure is also rectangular and its pounded earth walls are up to 10 m wide (Beijing and Henan 2007). While the appearance of sites of this style suggests a smaller population and perhaps a diminished ability to recruit labor when compared to Taosi, the local trajectories observed at each of the sites (and the others mentioned above) represent similar patterns of change vis-à-vis prior periods.

We further claim that when observed through the lens of the long-term trajectory approach, many of the developments seen at Taosi also are evident in the development of other regional polities. For example, large pounded earth platforms and remains of complex buildings, sometimes labeled as palaces, have been found in other walled sites such as the above-mentioned Wangchenggang, and at Guchengzhai (古城寨) in Henan (Henan 2002; Liu 2004, pp. 104–105). In regional mortuary tradition as well, increasing disparities between individuals and a much more clearly defined stratification are part of a trend shared by all regions, though it may have been stronger in some places (such as the Shandong peninsula) and weaker in others.

While we are focusing here primarily on the Yellow River area, similar findings are known from many other regions of China as well. Especially worth mentioning are well-known evidence of large-scale walled sites and the development of

settlement hierarchies from the middle Yangzi River and the Sichuan basin (Flad and Chen 2013; Zhongguo 2010). On the Liyang (澧阳) plain in northwest Hunan, the number and area of sites grew dramatically between the Chujialing period (3300–2600 BC) and the Shijiahe period (2600–1900 BC), from 45 sites with an accumulated size of 91 ha during the former, to 163 sites covering an accumulated area of 169 ha during the latter (Pei 2004). The Shijiahe (石家河) site in Hubei is an example of a large walled site; its walls enclosed an area of more than 100 ha and are 50 m wide at the base, 4–5 m wide at the top, and over 6 m tall (Hubei et al. 2003). Smaller walled sites also are known from this area.

The third millennium BC saw a tremendous increase in the trade of both raw materials and finished goods. Some of the artifacts and materials found at the largest graves at Taosi, such as alligator skins and jade artifacts that include *cong* tubes and *bi* disks, were probably brought to the site from the lower Yangzi River basin and may represent the elite-controlled exchange of prestige goods. Other prestige goods found at Longshan sites suggest an increased level of technological ability and clear, perhaps full-time, specialization. The best evidence for such developments might be the thin eggshell cups and fine black burnished pottery typical of sites in the Shandong area and, to a lesser extent, the middle Yellow River (Underhill 2002). Only highly trained potters could have produced such artifacts. Not only would their firing have required the ability to reach high kiln temperatures, but it also would have required absolute control over the firing process so as to achieve the desired effects and prevent the fragile artifacts from breaking while being fired and cooled. A few bronze and copper artifacts have been found at the Taosi site, the most sophisticated of which is a small copper bell, probably made using piece-mold techniques (Zhongguo 2010, p. 571). This bell and other metal objects were all found in relatively small graves, suggesting that bronze (or metal) was not yet considered a prestigious material. Nevertheless, the production of these objects, even if small and relatively unsophisticated, required a certain level of specialization and technological knowledge.

The production of jade artifacts, some quite complex, is further evidence of evolving craft specialization and the ability to invest much labor in prestige artifacts and/or religious paraphernalia. The most prolific manufacturing of complex jade artifacts is known to be from the lower Yangzi River area (the Liangzhu 良渚 and related cultures; Zhongguo 2010, pp. 673–691), suggesting a type of leadership strategy that was perhaps more closely associated with control over jade resources and jade-working artisans. However, locally produced jade artifacts also are known from Taosi and other Longshan sites.

The "collapse" of Late Neolithic society

The societies that flourished in different parts of China during the third millennium BC are often dubbed Late Neolithic cultures (or societies). This is a misleading term since it a priori assumes that because they belong to the Neolithic period, they are prestate and preurban societies. The timing of the rise and decline of these societies is crucial to our understanding of regional and supraregional dynamics. It is crucial, for example, that we know whether all of the above-mentioned polities peaked at the

same time or at different times. It is also relevant to the evaluation of the currently popular paradigm that argues that those Late Neolithic societies all collapsed at the same time and that their demise paved the way for the rise of a supraregional state. We argue that a close chronological examination suggests that this was not a homogeneous process whereby all societies peaked and declined at the same time but rather a more heterogeneous one, where each polity underwent a different—to varying degrees—trajectory of development.

Some scholars have argued that due to dramatic climatic fluctuations around 2000 BC, Late Neolithic societies experienced a decline in population density and level of complexity, or that they disappeared altogether. This reconstruction may hold true for some parts of China, especially along the eastern coast. For example, in the lower Yangzi River area, most Liangzhu sites disappeared, the construction of ritualistic mounds ceased, and the production of elaborate jade objects stopped around 2200 BC; the area seems to have been sparsely populated for several centuries until it recovered around 1800 BC (Stanley et al. 1999; Yu et al. 2000; Zhongguo 2010, p. 692). A similar decline has been documented in the Rizhao area of southeastern Shandong (Underhill et al. 2008; Zhongmei 2012). However, the process in inland areas is much less clear. An extreme example to the contrary is northeast China (north of the Yellow River basin), where the same period actually marks the start of fast population aggregation and the construction of larger and more complex sites (Chifeng 2011).

Even in the area of the middle Yellow River, the trajectory is not the same for all subregions. Taosi seems to have undergone a process of decline; sometime around 2000 BC the large rammed-earth enclosure was destroyed, and stone and bone debris found in the area of the public buildings suggest that it was converted into a workshop for craft production (Liu 2004, pp. 110–111). However, Taosi was not abandoned altogether, and evidence, including radiocarbon dates, suggests that it remained occupied until around 1700 BC (Zhongguo 2003, pp. 566, 838).

At the same time, slightly south of the Yellow River in central Henan, the Wangchenggang (王城岗) site experienced a period of marked expansion. A much larger fortified enclosure was added to the two small enclosures around 2100 BC. While it is unclear how long the wall was in use, it would seem that the occupation of the site continued during the first half of the second millennium BC (Beijing and Henan 2007, pp. 780–781). Not far to the east of Wangchenggang, the Xinzhai (新砦) site reached the peak of its development during the early part of the second millennium BC. Established during the late Longshan period, it expanded during this time (the so-called Xinzhai culture) to about 100 ha and was surrounded by two concentric ditches and rammed earth walls (Zhang et al. 2007). Recent radiocarbon dates indicate that Xinzhai flourished well into the 18th century BC (Zhang et al. 2007), making it contemporaneous with the rise of Erlitou.

The rise of the Erlitou state

The best-known trajectory of increased scale and social complexity is that of the Yiluo area, sometimes identified with the rise of the Xia Dynasty. Located

northwest of Wangchenggang, Yiluo experienced a period of rapid population growth during the early years of the second millennium BC. This was coupled with the dramatic expansion of the Erlitou site. The population of the Yiluo survey region may have slightly decreased during the transition from the late Longshan period to the early Erlitou period—perhaps because some of the inhabitants moved to the center at Erlitou, which was not included in the survey area—but it dramatically peaked during subsequent Erlitou phases (Liu et al. 2003). The Erlitou site itself occupied an area of about 100 ha during phase I of the Erlitou site. This initial stage is traditionally dated to c. 1900–1800 BC (Liu and Xu 2007), although others now place it at c. 1750–1700 BC (Zhang et al. 2007). Erlitou reached the zenith of its expansion, to around 300 ha, during Erlitou phases II–IV, traditionally dated to c. 1800–1550 BC but recently ascribed to c. 1700–1530 BC (Liu and Xu 2007; Zhang et al. 2007) (Fig. 3).

Enclosing walls have yet to be discovered at Erlitou, suggesting that the site was not actually fortified. The cluster of rammed-earth foundations and the remains of public buildings situated more or less at the center of the site are known in the literature as the palace city or palatial area (*gongcheng* 宫城; Zhongguo 2003). This area was established during phase II, and its most impressive buildings were

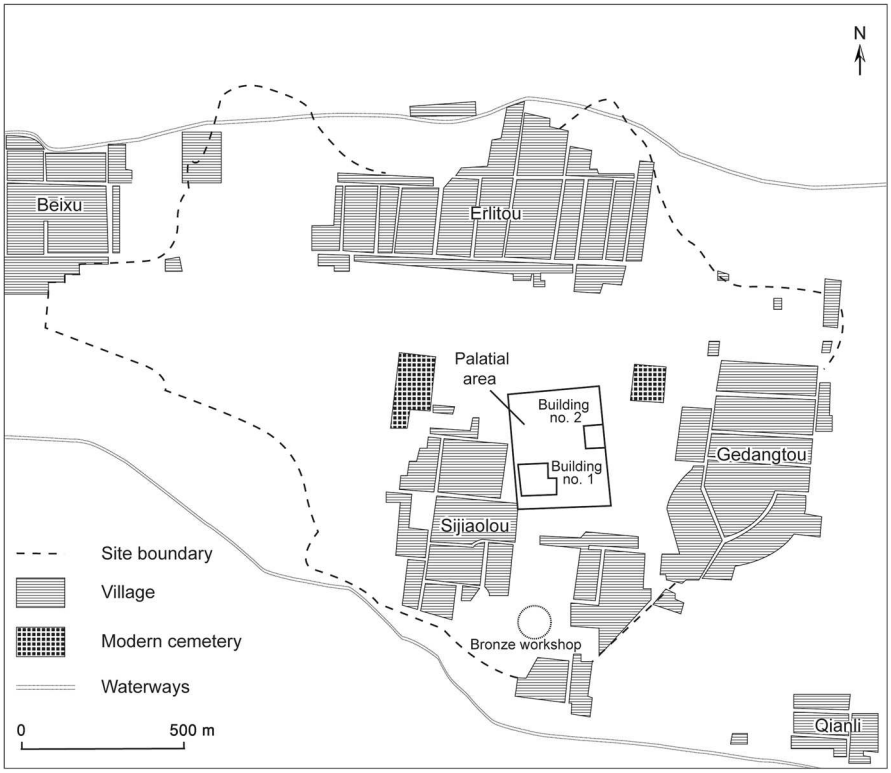

Fig. 3 Map of the Erlitou site

constructed in phase III. The palace city was about 11 ha and, during phase IV, was enclosed by rammed-earth walls about 2 m wide and surrounded by four large roads (Fig. 4). At least seven earthen platforms, ranging in size from about 300 to 9,600 m^2, have been found inside this enclosure.

The two best-preserved complexes in the palace city, dubbed Palace I and Palace II, stood on top of rammed-earth platforms that are 9,600 and 4,200 m^2, respectively. The main building, located at the northern side of each courtyard, stood on a secondary platform that elevated it above its surroundings. In Palace I, this platform measures 36 m × 25 m, with a rectangular building 30 m × 11 m on

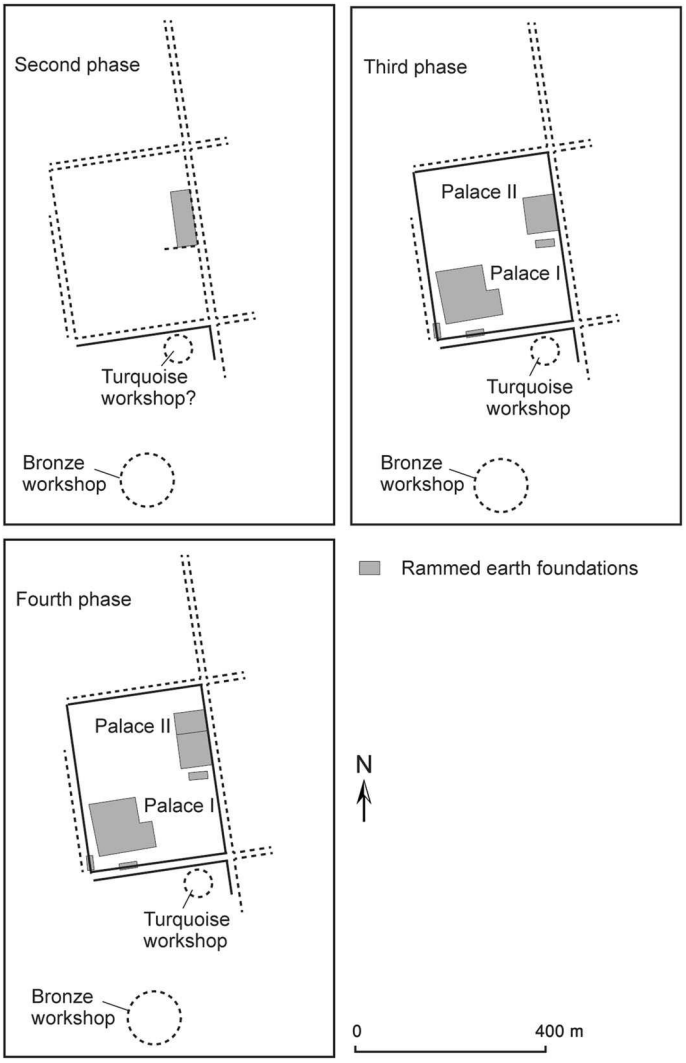

Fig. 4 Map of the "palatial" area at Erlitou

top of it (Fig. 5). The hall of Palace II is smaller, 22 m × 6 m, and is better preserved so that we can see its internal division into three rooms (Liu and Xu 2007; Zhongguo 1999, pp. 140–159; 2003, pp. 65–68). While these are large complexes, they do not seem to constitute a clear departure from the kinds of public building seen at sites such as Taosi.

Mortuary findings excavated at Erlitou (or other contemporaneous sites assigned to the Erlitou culture) are not comparable to those of the preceding Longshan period. No clear cemetery or segregated elite burial area has been located as of yet. A few graves located inside the palace city may be related to the elite structures inside, but the nature of any possible linkage is not clear. The largest grave discovered so far is located behind the main hall in Palace II. It is 5.2 m × 4.25 m and 6 m deep, with a secondary ledge around the perimeter containing the remains of a lacquered wooden coffin. The grave was looted in antiquity, so it is difficult to estimate how richly furnished it was (Zhongguo 1999, p. 157). All other graves

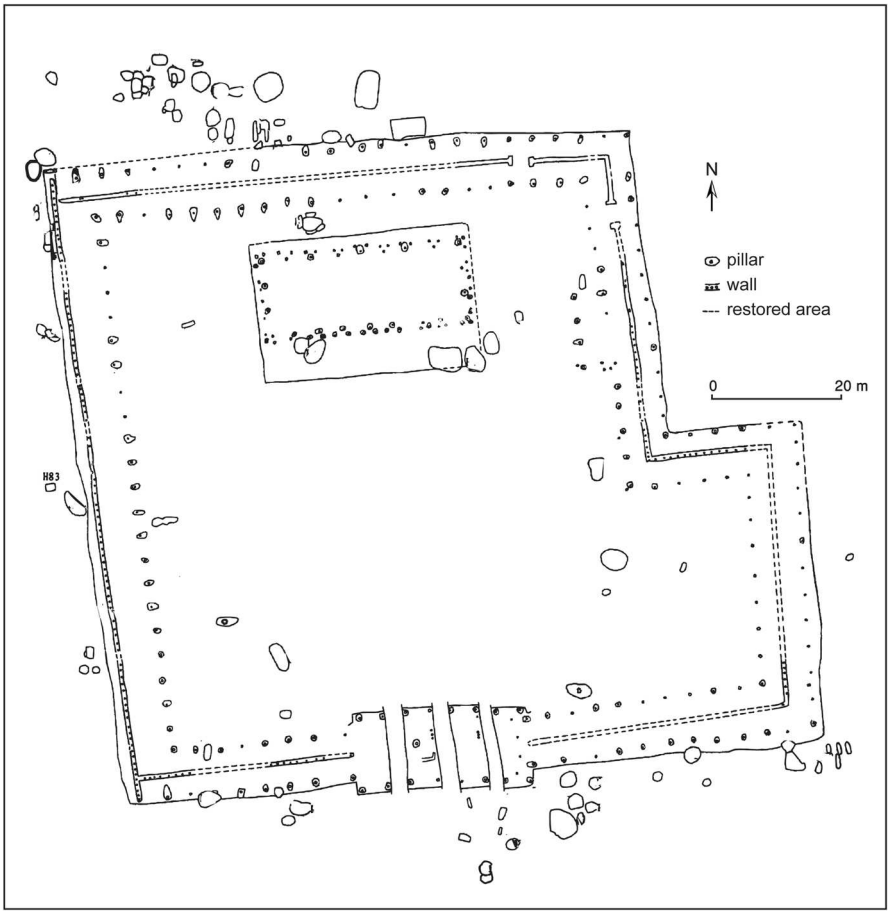

Fig. 5 Ground plan of Palace I at Erlitou

discovered at the site thus far are much smaller, though some contain a secondary ledge and a wooden coffin. The number of artifacts found in individual Erlitou graves ranges from none to about 20. Ceramic vessels are the most common grave goods, but richer graves might contain prestige artifacts such as bronze vessels (not known from previous periods), other bronze artifacts, turquoise, and jades.

Evidence of craft specialization and large-scale production, some of it perhaps under the supervision of the elite, is much more compelling. The best evidence is offered by the remains of a bronze-casting foundry some 300 m south of the palace city that was surrounded by its own rammed-earth walls. Numerous remains of crucibles, casting molds, and slugs have been found in this area (Liang and Sun 2004). More than 100 metal items have been found at Erlitou, most of them made from copper mixed with a lead and tin alloy. Although the proportions of tin and lead in different artifacts vary considerably (Zhongguo 2003, pp. 114–115), the craftsmen were clearly well versed in bronze production. The development of piece-mold techniques for casting complex bronze vessels was a major technological breakthrough. A recent survey of bronzes found at Erlitou counted 17 vessels, all but two of which were excavated from graves. The large majority of vessels (15 of the 17) are small cups known as *jue* (爵) and *jia* (斚). A *he* (盉) and a *ding* complete the collection (Liang and Sun 2004).

The production of turquoise artifacts at Erlitou may have been another elite-sponsored craft. The concentration of turquoise pieces and debris in the area outside the southern wall of the palace city suggests that a workshop was located there (Liu and Xu 2007). Many of the turquoise artifacts found in elite contexts at Erlitou must have been produced by this or similar workshops. An impressive example found in one grave is a dragon-shaped artifact made from about 2,000 pieces of turquoise and jade. Three bronze plaques inlayed with turquoise that were found in Erlitou are a good illustration of cooperation between the two elite-sponsored crafts (Fig. 6).

It would seem that during the height of the Erlitou site's power (and by extension the Erlitou or "Xia" polity), fortified centers associated with the Erligang (or early Shang) polity were already appearing in the same region. Currently available C14 samples date phase III of the Erlitou site—the period associated with the most notable evidence of the site's prosperity—to c. 1610–1550 (or even 1530) calibrated years BC, while Erligang sites such as Zhengzhou (郑州) and Yanshi (偃师) date from c. 1600 BC (Zhang et al. 2007; Zhongguo 2003, pp. 659–663). In particular, the location of Yanshi, only 6 km northeast of Erlitou, raises questions about the relationships between the two cultures and the polities they represent.

The Erligang state

The structure of the political centers of the Erligang period is different from anything seen before. Although many of them are enclosed by rammed-earth walls, a tradition that was underway during the Neolithic period, their standard rectangular shape and clear internal division suggest a much more formal definition of what such a city should look like (Fig. 7). The walls of two sites are impressive, measuring 17-25 m wide at the base and 9 m tall. The inner walls of Zhengzhou

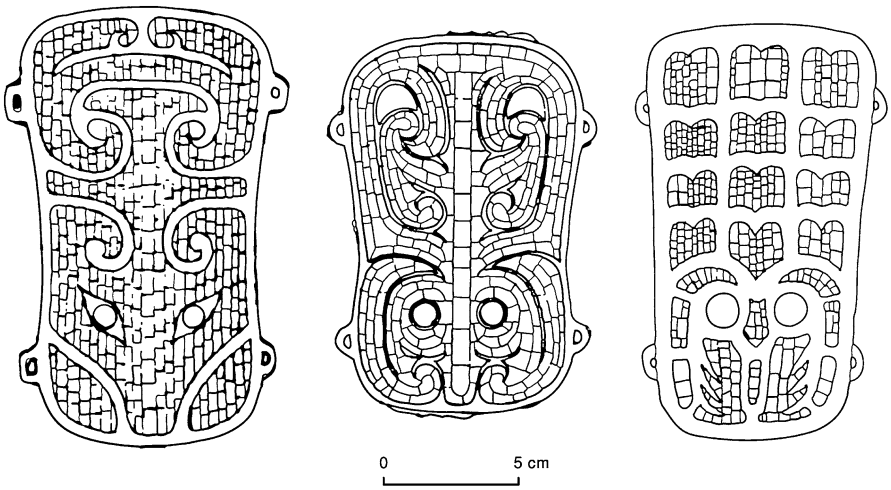

Fig. 6 Three bronze plaques inlaid with turquoise from Erlitou

enclosed an area of about 300 ha, but the area inside the recently discovered outer walls was as large as 1,500 ha (Fig. 8). The area inside the walls of Yanshi, which may have been one of the secondary centers of Zhengzhou, is roughly 200 ha. While there has not yet been a systematic survey, settlement around the two sites is reportedly very dense, including relatively large tertiary centers (Liu and Chen 2003, pp. 87–101; Yuan and Zeng 2004).

Although the area inside the inner city of Zhengzhou is not well preserved, it appears that much of it was devoted to public or elite structures. The rammed-earth foundations range in size from 100 to 2,000 m^2. Rammed-earth foundations are found in both parts of the Yanshi city, but the ones in the inner part are larger and are thought to have been the palatial area, an area that is itself partitioned. Six large buildings in its southern part are identified as palaces, while a large area (~ 3,000 m^2) in the center is identified as the place where rituals took place (Fig. 9). The large quantities of plants, human bones, and bones of domesticated and wild animals found in this area are thought to represent the remains of sacrifices and rituals held in the palace area (Du 2006).

While no large-scale graves have been found at Zhengzhou, graves dated to the Early Shang period from other sites hint at the size of the mortuary monuments at the purported political center. At Panlongcheng (盘龙城), a grave from the Lijiazui (李家嘴) locality is 3.75 m × 3.4 m, has ledges on all four sides, a wooden chamber, a wooden coffin, and a "waste pit" dug under the body of the main occupant. The tomb contains 23 bronze ritual vessels, the largest of which is a 55-cm-tall *ding*, 40 bronze weapons, jade artifacts, and ceramic vessels, as well as the bones of three accompanying human victims. Hierarchical differences in mortuary treatment are made clear by the majority of Erligang phase graves, which are, in contrast, 2 m or less in length and have no ledges or wooden chambers. A few contain a wooden coffin and bronze vessels, but most are furnished only with ceramic vessels and stone artifacts (Zhongguo 2003, pp. 242–246).

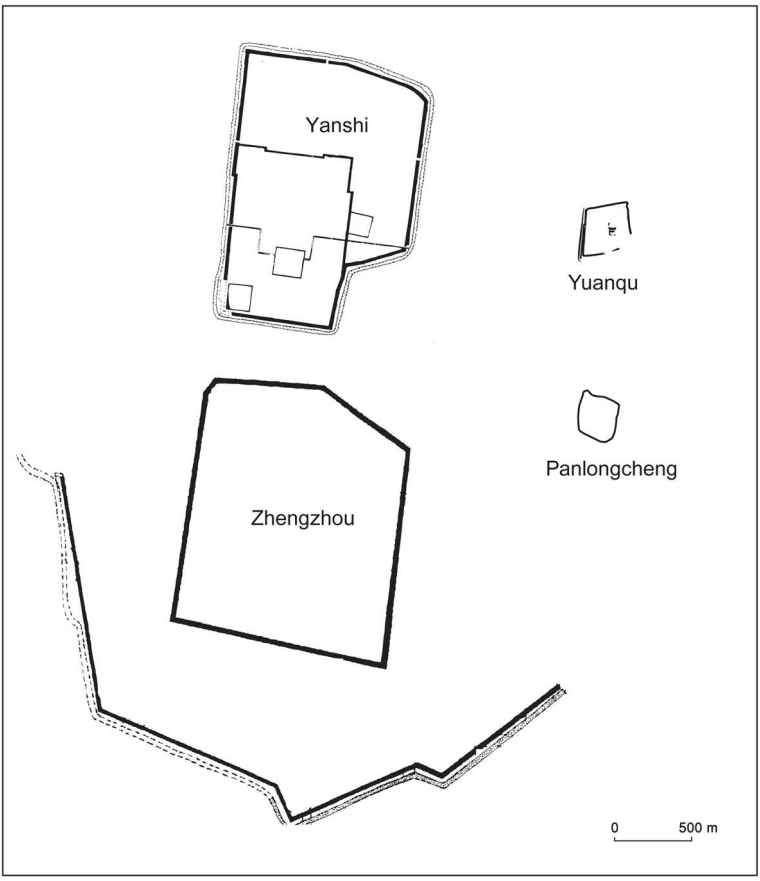

Fig. 7 Comparison of the size and shape of Erligang-period city walls

In most Erligang period centers, evidence for different types of urban activity, including habitation and production areas, is located outside the rammed-earth walls or between the inner and the outer walls. At Yanshi, residential areas, burial storage facilities, a pottery workshop, and a bronze foundry were all found within the area of the outer city. Similar evidence on a much larger scale also has been found at Zhengzhou. Although the areas between the outer and inner walls and beyond the outer wall are not well surveyed, scattered excavations have revealed the remains of two bronze foundries, a ceramic production workshop, and a workshop for the production of bone tools. Also found here are house foundations, storage pits, burials, and other installations (Henan 2001; Yuan and Zeng 2004).

Many lines of evidence point to a dramatic increase in the sophistication of craft production and the level of specialization during the Erligang period. The technology used to cast bronze vessels—the piece-mold or section-mold technique—was already developed by the Erlitou period, but it reached a much higher level of sophistication during this period. Vessel shapes were now much more

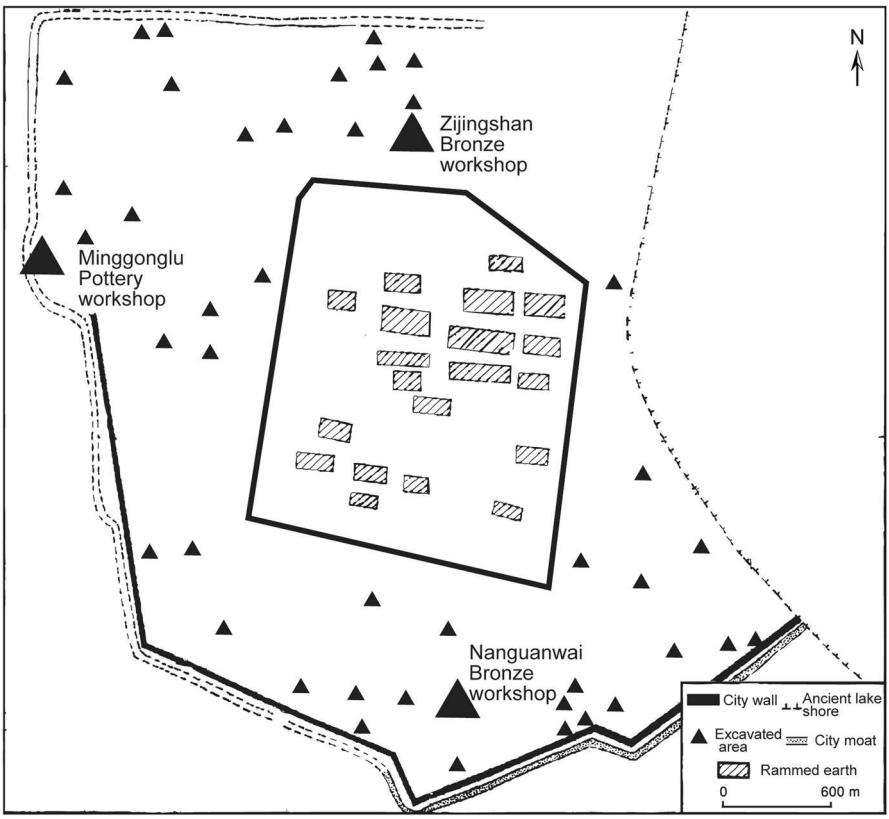

Fig. 8 Layout of the Zhengzhou city

varied than before and much more lavishly decorated. The complexity and sheer size of some of these vessels show their casting to have been a real technological achievement. For example, one bronze square *ding* (*fangding* 方鼎) dated to the Erligang period is 100 cm tall and weighs 86.4 kg. More bronze was used to cast this single vessel than was used for all of the known Erlitou vessels combined. Another example is three hoards of bronze objects discovered in the outer city of Zhengzhou, containing 28 bronzes with a total weight of over 500 kg (Thorp 2006, pp. 89–91). Mold parts found at the different bronze workshops in Zhengzhou suggest that one, the Nanguanwai (南关外), specialized in the production of ritual vessels (although it also produced tools and weapons), while another, Zijingshan (紫荆山), produced few vessels, if any, and focused instead on weapons and small tools (Fig. 8) (Henan 2001, pp. 307–383). Such workshop specialization, which can be seen in other crafts as well, may have to do not only with the artisans working in each foundry but also with the level of political control over and sponsorship of these workshops. Some of the attributes of bronze production are shared by other Erligang crafts. A pottery workshop found at the Minggonglu (铭功路) locality, west of the inner walls of

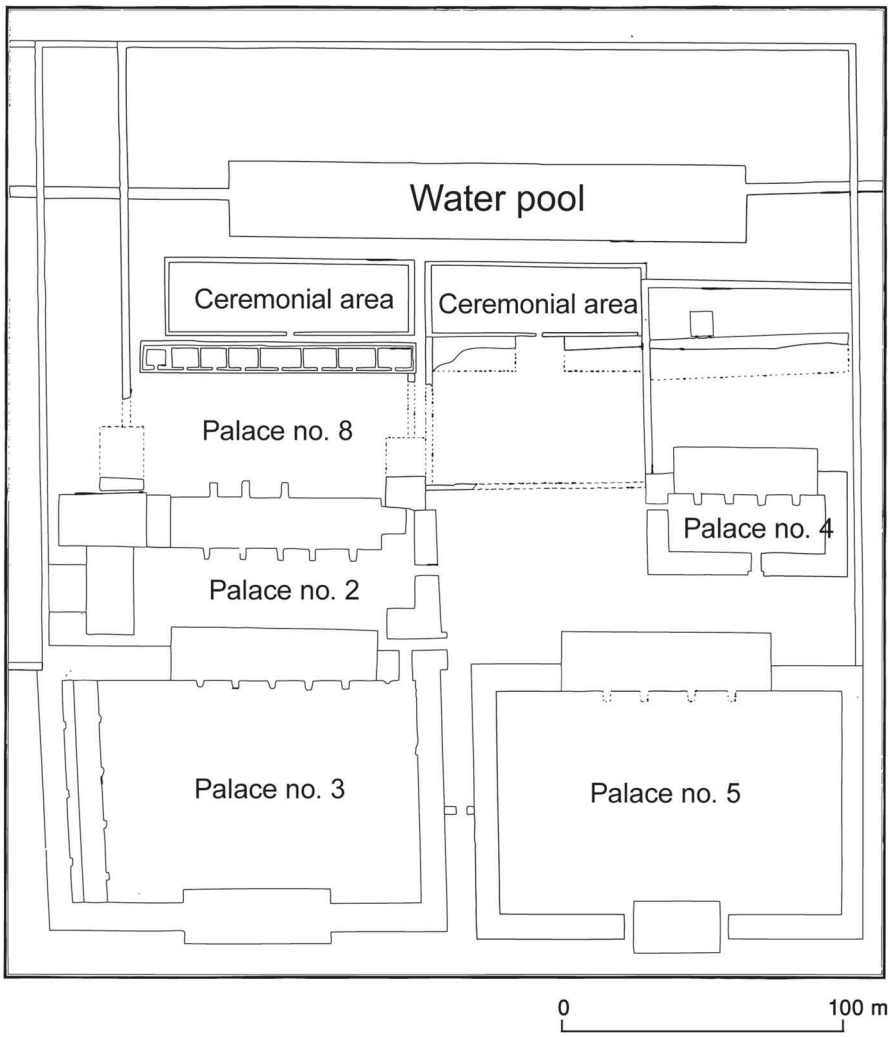

Fig. 9 The "palatial area" at Yanshi

Zhengzhou, yielded a limited number of vessel types, suggesting a high degree of workshop specialization (Henan 2001, pp. 384–425).

Although some scholars suggest that the political powers of the Shang elite declined during the following Yinxu phase (e.g., Liu and Chen 2003, pp. 127–145), both archaeological data and written sources, available for this period in the form of oracle-bone inscriptions, make it clear that a very hierarchical society with a strong central authority, specialization, and division of labor still existed at the time. The late Shang center at Yinxu, although unfortified, covers an estimated area of 30 km^2 (Zhongguo 2003, p. 295). Extensive evidence of craft production, including large-scale workshops of bronze, pottery, bone, and stone artifacts, suggests the

continuation of the Erligang tradition. Finished artifacts are even more impressive than those of earlier times. Examples include a single bronze vessel discovered at Yinxu, the so-called Si Mu Wu Ding (司母戊方鼎). It weighs 875 kg and is the largest bronze vessel cast anywhere in the ancient world. An additional 466 bronze vessels, weapons, and tools, weighing a total of 1,600 kg, were recovered from Fuhao's grave at Yinxu, which might be ranked as belonging to only the third or fourth level of the Shang hierarchy. The scale of the looted graves in the royal Xibeigang (西北冈) cemetery at Yinxu also is suggestive. The eight largest cross-shaped tombs, identified as the graves of Shang kings, range in size from 107 to 192 m^2 and are up to 12 m deep, several times larger than anything seen in China previously (Zhongguo 2003, pp. 300–303).

Analyzing the trajectory of the middle Yellow River region

It should be made clear at the outset that what we are actually describing are several parallel trajectories of social change in different subregions. These subregions are spatial units of analysis that aid in the delineation of relationships between human entities and should not be thought of as geographically unique spaces of ethnic homogeneity (Kantner 2008). Although these subregions were in contact with one another, they remained politically independent for at least most of the period under consideration here. In fact, one of the main insights of this rudimentary survey is that the rise of states in the middle Yellow River area should perhaps be seen as having at least two phases. First, relatively unstable regional states arose during Longshan, continuing throughout the Erlitou period. These regional states underwent cycles of rise and decline, each peaking at a different time and representing different combinations of leadership and legitimation strategies. The second phase is marked by the rapid emergence of a supraregional state during the Erligang period. The supraregional state was not only more stable, in that social institutions endured for longer periods of time, but it also continued to evolve during periods that are not described here in detail. The first is the Yinxu period already mentioned, but dramatic (perhaps even revolutionary) transformations of the supraregional states in China also occurred during the Western Zhou period (c. 1050–771 BC) and the Warring States period (478–221 BC), which culminated with the establishment of the first Chinese empires.

Our use of the terms regional state and supraregional state is quantitative in the sense of denoting differences in the scale of political influence and actual political control over physical borders (M. L. Smith 2005). We assume, however, that those differences are not only a matter of geographic scale but also reflect on the strategies of the paramount leaders and on the formation of a progressively more formal political mechanism. Another tentative pattern observed through the application of the long-term trajectory approach in the Chinese case is that, while societies of the regional-states phase often reverted to a less complex form of sociopolitical organization, once a supraregional state was established, returning to a prestate formation is more rare (though not impossible, of course).

As suggested above, our method of identifying periods of state formation is to examine the long-term trajectory and to look for periods of rapid contemporaneous change across different sociopolitical and economic aspects (or more precisely, their archaeological correlates). Such a method, however, faces the problem of quantification: how are we to measure the scale of change? The development of quantifying methods is an ongoing and sometimes contentious issue. Here, though, we present a few examples that we believe clarify the advantages of such methodologies. One such example, already mentioned, is to compare the level of specialization, scale of craft production, and the extent of the elite's ability to mobilize the resources needed for such an enterprise. It is difficult to calculate this for the earlier periods, though it seems that craft production was much more specialized during the third millennium than it was during the fourth. More direct evidence can be found for comparing the level of bronze production during the Erlitou and Erligang periods. This comparison clearly demonstrates the sheer scale of differences in bronze production between the two periods and calls into question some of the reconstructions that have suggested that large-scale bronze production was one of the driving forces behind the supposed expansion of the Erlitou polity.

A more systematic approach can be demonstrated by comparing the scale of the largest public works of each period and the amount of labor needed to construct them. Such estimates have a direct bearing on understanding the ability of the paramount leaders to control and mobilize the population. Here the technological continuity from the Neolithic to the Bronze Age (and beyond) is an advantage, because we can assume that the manpower demands remained the same. The most commonly used method of constructing monuments during these periods—site walls, platforms, and public buildings—is the rammed-earth technique (*hangtu* 夯土). According to the Han mathematical manual, *Jiuzhang Suanshu* (九章算術, Nine Chapters on Mathematical Art), a single conscript worker was expected to excavate, transport, and construct 7.55 m^3 of rammed-earth wall in a month (Shen et al. 1999, pp. 258–259). Modern experimental work has resulted in very similar estimates (see discussion in Shelach et al. 2011).

Based on such numbers, we can estimate the construction costs of monuments from different phases of our trajectory in terms of person-months. Few monuments from the late Yangshao period are known, and it seems that large-scale public works were not common. Indeed, one of the few examples is the site wall at Xishan. Although not well preserved, we can roughly estimate that the wall, which enclosed an area of roughly 10 ha, was constructed from 11,300 m^3 of rammed earth and would have required about 1,500 person-months of work. In comparison, the walls at Taosi, the largest monument known from the Longshan period, were constructed from 292,000 m^3 of earth, requiring some 39,673 person-months of work to construct. These estimates, which do not take into account other known public works from this site such as the internal wall and the large public buildings, imply that 26 times more work would have been carried out at Taosi than in Xishan, thereby representing a quantum leap in the ability of the paramount leaders to control large work forces. As mentioned above, no city walls were found at Erlitou, but the construction of the entire palace city, including the external walls and the foundation platforms of the buildings inside it, had an accumulated volume of some

40,000 m^3, which would have required 5,298 person-months of work to construct. This is roughly seven times less work than the minimal estimates for the work invested in Taosi. Moreover, if the Erlitou population during phase III was 18,000–30,000 (Liu 2004, pp. 229), then between a third and a fifth of the population could have constructed it within one month, and 10–16 % of the population could have constructed it in two months. In comparison, the internal walls at the Erligang site at Zhengzhou were made of 1,392,000 m^3 of rammed earth and would have required 184,370 person-months to construct. Even without taking into account the external walls of the site, which must have been much more expensive to construct, this estimate implies 35 times more effort than that required for the public works in Erlitou and 4.5 times more than those of Taosi. The trajectory from the late Yangshao to the Erligang period is thus marked by two exponential jumps in the amount of labor invested in public work: the first during the Longshan period (or late second millennium) and the second during the Erligang period (or around 1600 BC).

With the advancement of systematic regional surveys in different subregions of the middle Yellow River basin, it will become possible to systematically compare the levels of population density and the formation of site hierarchies during different phases of the local and supralocal trajectory in China. However, such comparisons that are based on data collected through nonsystematic research are still unreliable and may be biased. Once more reliable data have been accumulated, we will have to develop consistent ways of comparing different trajectories and evaluating them, since the common practice in Chinese archaeology of looking at the site-size histogram and identifying a four-tier division as evidence for the emergence of the state (e.g., Liu and Chen 2003) has been shown to be based on subjective criteria (Lamberg-Karlovsky 2008, p. xviii; Peterson and Drennan 2011).

A crucial component of our analysis, which admittedly is not easy to estimate, is the geographic scale of political control during each period of the local and supralocal trajectory. We have little evidence that late Yangshao polities extended much beyond the local community. Although sites like Xishan could have exercised a degree of influence over their hinterlands, it does not seem plausible that it would have extended very far. During the Longshan period, the regular spread of fortified sites suggests the existence of polities about 50 km wide and covering an area of some 1,500–2,000 km^2. Larger centers such as Taosi may have integrated somewhat larger areas, but we have no evidence that they were extended to include multiple regions.

The size of the area controlled by the Erlitou site during its zenith (phase III) is a debated question. According to one recent model, it extended as far south as Panlongcheng (about 500 km!) and about 100–150 km northwestward to sites such as Dongxiafeng (东下冯) and Nanguan (南关). This expansion is often said to have involved the aggressive conquering of faraway lands, along with the establishment of colonies crucial for the extraction and acquisition of particular resources that were essential for Erlitou's functioning as a governing state (Liu 2004, pp. 232–234; Liu and Chen 2003).

One of the critical problems with such a reconstruction is that it is based on the assumption that the extensive distribution of Erlitou cultural materials is

coterminous with the political boundaries of the Erlitou state. Without further supporting evidence, such an assumption cannot be substantiated, especially given that similar assumptions are not made for late Neolithic regional cultures. In fact, stylistic variations between the Erlitou core area and those more remote regions (Zhongguo 2003, pp. 89–94) might point to affiliations with a number of polities. The expansion southward is especially problematic, as only small quantities of diagnostic Erlitou ceramics have been found at very few sites in southern Henan province. This fact, and that some of the ceramics are stylistically dated to Erlitou phases I and II (Xu Yan 2009), is more indicative of the gradual development of peaceful interactions than of the militaristic expansion of the Erlitou polity. Because, as discussed above, elite-sponsored craft production at Erlitou was not conducted on a large scale, control over resources, which, according to this model, motivated the militaristic expansion, may not have been so crucial. If carried out over a period of 200 years (phases II–IV), even metal production, for which we have the most evidence, could have been sustained by resources acquired through peaceful exchange with neighboring polities. If we use the same methods for delineating the political borders of Erlitou as those used for the Longshan polities, it would seem that the Erlitou polity may have extended no further than perhaps 70 km in each direction, somewhat larger than the Longshan period polities but still not spreading out beyond the local region.

The extent of the Erligang polity also is disputed, but even skeptical reviewers agree that its political influence (and probably direct political control) extended considerably beyond the immediate region around Zhengzhou. While this reconstruction is not yet based on direct textual evidence (which exists only from the later Yinxu period), similarities in the layout and structure of city walls and of artifacts such as bronze vessels now go beyond that which can be explained by cultural influences (Bagley 1999, pp. 156–157). The rectangular shape of all Erligang fortified sites (of which at least seven are known) and their internal organization suggest a shared "blueprint," and perhaps centrally made decisions regarding their construction. Bronze vessels, some of them very large and heavy and found as far away as Panlongcheng, are identical to those found at the Zhengzhou center, suggesting either their centralized production, which by now operated in the service of state-level rituals, or their regional production under the supervision of the center. The resources needed for the large-scale production of bronze also must have come from regions far away from the center. Once more, we can see two phases in the geographic expansion of political control. The first, during the Longshan and Erlitou periods, marks regional expansion; the second, during the Erligang period (and continuing to the Yinxu), was supraregional in scale.

Conclusions, broader implications, and suggestions for future research

Chapman (2008) has recently offered an interesting reassessment of the ways in which archaeologists understand, define, and identify states. Looking at Bronze Age Spain, Chapman presents an overview of the arguments made by local Spanish archaeologists, claiming that the Argaric culture was a state-level society. Chapman

does not agree with those who would abandon the use of the term "state," but he directs his attention to the inherent tension between the evaluation of claims for the state in a given culture based on the seemingly universal characteristics of neo-evolutionary models and the existence of culture-specific manifestations of the state. Chapman concludes that rather than attempt to understand how the Spanish Bronze Age state fits into existing (predominantly Anglo-American) models of statehood and the emergence of states, archaeologists should use alternative definitions and trajectories to question and reevaluate theories and concepts of the state that are at present taken for granted (Chapman 2008, pp. 159–160).

Chapman's exercise reveals the incongruities of the universal and the particular. His conclusions, very much in the spirit of Trigger's arguments (1998, 2003), are a call for the cautious continuation of the contextual study of past cultures. This, in turn, can provide data with which to construct theories of social change and development, as opposed to fitting observations into predefined and seemingly universal theories of social change. We concur with this approach but find a major flaw in the way these observations are made. Isolating a single society or period and asking the simple question, "Was this society/period a state?", forces us to answer with an equally simplistic question: "How does this culture compare to what we know of other states?" In other words, such an approach forces archaeologists to search for criteria on a trait list. Did it have a palace? Was violence monopolized? What was the nature of its political networks and how was power exercised within its society? In contrast, we argue that a long-term model can account for case-specific trajectories of state development without succumbing to simplistic a priori neo-evolutionary models that dictate social stages according to predetermined trajectories of social development, the rate of change through these stages, or the criteria for political and social entities and constellations.

To apply this model, identifying new political and social changes relative to their precursors is a key to understanding how states evolved and what their characteristics were. Obvious similarities between trajectories will be found in the development and manifestations of the state, as well as thresholds that must be crossed for the state to exist. For example, it is hardly conceivable that a state would evolve prior to the development of agricultural or other means of acquiring stable food surpluses. However, it is important to differentiate between thresholds and stages. Agriculture is certainly not a stage on the road to statehood any more than palaces and metallurgy are direct indicators that a society has reached the level of statehood. Equally, the identification of a particular social and political constellation as that of a state is not tantamount to accepting neo-evolutionary models of state development, fixed rates of change, or a single criterion of its manifestation (see M. E. Smith 2012).

Finally, rejecting the term "state" in order to preserve culture-specific social and political configurations should be regarded as highly problematic. If such an argument is accepted, it would be equally applicable to other currently fashionable research topics such as the city, the community, the family, and so on. This would not only make the communication of data to scholars outside one's immediate region and period extremely difficult, but if followed to its (logical?) conclusion, it would preclude any kind of cross-cultural comparison at all. Instead, we argue that while the uncritical search for the state has the hazardous potential of trivializing culturally

specific trajectories and cultural uniqueness, the notion of the state is still a useful category through which to explain and present culture-specific developments. The examination of regional and culturally specific long-term trajectories of change and development can reveal both specific manifestations of the state, its characteristics, and historical specific conditions of its rise and fall, as well as provide further data with which to compare trajectories and processes of social change, decline, and even expansion. In other words, we believe that comparing sociopolitical trajectories (rather than states) from different regions and even across the globe can be instrumental to furthering the understanding of local developments as well as perhaps detecting some regularities that are shared by all or some of the trajectories.

Pursuant to the above observations, we argue that the rise of states in the middle Yellow River area can be divided into at least two phases. The first phase saw the rise of relatively unstable regional states during the Longshan and Erlitou periods: the second phase involved the rapid emergence of a supraregional state during the Erligang period. This process may not have been limited to the middle Yellow River area. In the middle Yangzi River basin, for example, such sites as Shijiahe may represent regional states, while similar developments also are known from the Sichuan basin. Questions concerning the uniqueness of the rise of the supraregional state of Erligang and its sway over processes in more remote areas that were not under its control or political influence are beyond the scope of this article. It is our conclusion that theories that view Erlitou as the single earliest state in China are still very much rooted in the traditional historical paradigms of dynastic succession. Moreover, later Chinese-specific cultural elements, such as bronze ritual vessels, are still used as markers of social complexity.

Understanding the mechanisms and driving forces behind processes of change and development is central to the archaeological reconstructions of the past, and in China, archaeologists have most commonly explained change and development using a Marxist framework (Shelach 2004; Tong 1995). Liu and Chen (2006) have provided a stimulating explanatory model for the development of the earliest states in China. Implementing the dual-processual framework established by Feinman (1995) and Blanton et al. (1996), they propose that the political strategies practiced by emerging elites in China were central to the outcome of attempts to successfully navigate environmental stress at the end of the third millennium BC. The highly unstable network strategies employed by the elites in the Taosi and Shandong regions (exemplified mainly by the large number of exotic goods traded over long distances) were impossible to maintain during later periods of turmoil. The detrimental sociopolitical practices of these societies resulted in the collapse of their centralized political systems and brought about a decline that ultimately hindered their development into full state systems. In contrast, societies in the Henan region responded to these changing circumstances differently. Both the construction of town walls and the intensive use of military force to claim and protect scarce resources are understood to reflect corporate strategies employed through group-oriented chiefdom organizations. For Liu and Chen, this successful strategy is ultimately the reason for the greater political stability in this region and for the emergence of state-level societies based on the control of natural resources and labor force during the Erlitou period (Liu and Chen 2006, pp. 162–168).

As we have shown, however, this argument is problematic for a number of reasons, namely, the supposed clear chronological gap between Late Neolithic societies and the more developed periods at Erlitou, the erroneous understanding of shifting climatic conditions during the late third millennium that resulted in the collapse of these societies, and the many other assumptions about the nature of the Erlitou polity. Furthermore, it is important to point out that the dual-processual model should not be taken as a simple dichotomization of social constellations but as a fluid continuum of possibilities (see Feinman 2010). Indeed, in his evaluation of a number of long-term development trajectories in the Chinese Neolithic and Bronze Ages, Peterson (2006) finds that the constituting axes of dual-processual theory combined in unique ways: wealth-financed societies tended to be larger in scale, could be considered more sociopolitically complex, and were, in fact, more related to marginal environments than polities focusing on staple finance. Peterson's study highlights not only the value of a broad approach that surveys a large amount of available data, as we have argued here, but also, as the proponents of dual-processual theory intended, the importance of carefully testing theoretical models and the dangers of uncritically applying them to the case at hand.

Although not discussed in this article, we suggest that when different variables in the archaeological record are rapidly cotransformed, these changes are perhaps correlated with meaningful changes in leadership strategies, inter- and intrasocietal relationships, and/or other aspects of the sociopolitical sphere. Thus, identifying such periods can be the first step in addressing these sociopolitical changes and provide a stepping-stone from which to define their varying constellations.

In contrast with the method of reconstructing the unknown from the known (or the more remote past from better known, more recent historic periods), we have argued that, in the Chinese case, a less biased and fuller understanding of historical developments is achieved by examining the evidence from the opposite direction, from the deeper past toward the present. By taking a broad view and moving forward through time and not backward, significant social changes and unprecedented political developments can be readily identified. From this perspective, the most exceptional and unprecedented developments are revealed to have occurred prior to, and following, the Erlitou period/site. As already mentioned, this was by no means the final stage of state development in Chinese premodern history. Dramatic transformations occurred during periods that are beyond the scope of this article, including the development of highly centralized bureaucratic states during the Warring States period (478–221 BC) and the establishment of immense Chinese empires during the Qin (221–208 BC) and Han (206 BC–AD 220) dynasties.

Instead of attempting to find "the state" in ancient China, we have advanced here an approach that seeks to understand the various types of states that developed in China. The Shang polity, for example, has been described as a string of city-states (Yates 1997), a segmentary state (Keightley 2000), a territorial state (Trigger 1999), and a village state (Maisels 1990, 2010). In contrast, Chang (1989) has challenged the reworking of East Asian data to fit Western models and advanced instead an understanding of unique elements of Chinese developments and social institutions, such as the importance of shamanism as an major avenue to power. These discussions have proved useful in highlighting Erligang and Yinxu's political institutions,

religious roles, and elite power structures, as well as strategies of production, influence, trade, and consumption. They approach the question of defining the Shang polity, however, either by separating it from the developments that preceded it and proceeding to fit it into the closest working definitions, or by downplaying important processes shared by cultures worldwide. While we disagree with Chang's emphasis of shamanism, we agree with his attempt to build state-formation models from the ground up rather than imposing preexisting models developed elsewhere. Following the call by Drennan et al. (2012) for a "renewed commitment to cooperative research in archaeology," we wish to see comparisons of long-term trajectories in an effort to construct Chinese culture-specific models of development and to allow for China's further engagement in a more global archaeology of complex societies.

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